# User Manual

Revision 1.000
English

## J1939 / CAN – Converter

(Order Code: HD67439)

for Website information:
www.adfweb.com?Product=HD67439

for Price information:
www.adfweb.com?Price=HD67439

### Benefits and Main Features:

- Very easy to configure
- Low cost
- Wide supply input range
- Isolation between two buses
- Industrial temperature range:
  -40°C / 105°C (-40°F / 221°F)

*HD67439*

For others Gateways / Bridges:

**J1939 to Modbus**

See also the following links:
www.adfweb.com?Product=HD67212 (Modbus RTU)

**CANopen to Modbus**

See also the following links:
www.adfweb.com?Product=HD67001 (Modbus RTU Master)
www.adfweb.com?Product=HD67002 (Modbus RTU Slave)
www.adfweb.com?Product=HD67004 (Modbus TCP Master)
www.adfweb.com?Product=HD67005 (Modbus TCP Slave)

For others Gateways / Bridges:
For **CAN bus 2.0A** and/or **CAN bus 2.0B** to **Modbus**

See also the following links:
www.adfweb.com?Product=HD67011 (Modbus RTU Slave)
www.adfweb.com?Product=HD67012 (Modbus RTU Master)
www.adfweb.com?Product=HD67014 (Modbus TCP Slave)
www.adfweb.com?Product=HD67015 (Modbus TCP Master)

Do you have an your customer protocol?
See the following links:
www.adfweb.com?Product=HD67003

Do you need to choose a device? do you want help?
Ask it to the following link:
www.adfweb.com?Cmd=helpme

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## UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- Updated
- Related to the product you own

To obtain the most recently updated document, note the "document code" that appears at the top right-hand corner of each page of this document.

With this "Document Code" go to web page www.adfweb.com/download/ and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

To obtain the updated documentation for the product that you own, note the "Document Code" (Abbreviated written "Doc. Code" on the label on the product) and download the updated from our web site www.adfweb.com/download/

## REVISION LIST:

| Revision | Date | Author | Chapter | Description |
|---|---|---|---|---|
| 1.000 | 16/10/2014 | Dp | All | First released version |
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## WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.
ADFweb.com is not responsible for any error this manual may contain.

## TRADEMARKS:

All trademarks mentioned in this document belong to their respective owners.

## SECURITY ALERT:

### GENERAL INFORMATION

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device are required for each individual application, legal and safety regulation. The same applies also when using accessories.

### INTENDED USE

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

### QUALIFIED PERSONNEL

The device can be used only by qualified personnel, strictly in accordance with the specifications.
Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

### RESIDUAL RISKS

The device is state of the art and is safe. The instrument can represent a potential hazard if they are inappropriately installed and operated by personnel untrained. These instructions refer to residual risks with the following symbol:

This symbol indicates that non-observance of the safety instructions is danger for people to serious injury or death and / or the possibility of damage.

### CE CONFORMITY

The declaration is made by us. You can send an email to support@adfweb.com or give us a call if you need it.

**CHARACTERISTICS:**

The "**HD67439**" series are rugged devices used to interface J1939 devices with CAN devices.
With his particular enclosure, equipped with four fixing lugs, makes available the mounting of the device in any plane surface (horizontal, vertical, oblique).
It is possible to have the device varnished or totally resined and also in both cases with "Mini-Fit®" connectors or "AMP SuperSeal 1.5" connectors. If is resined, the enclosure, like the "AMP SuperSeal 1.5" connectors, is waterproof (IP63).

All the four series have these characteristics:

- Triple 4kV isolation between Power Supply / CAN / J1939;
- Varnished / Resined (optionally);
- Wide power supply input range: 8…26V AC | 10…40V DC;
- Mini-Fit® / AMP SuperSeal 1.5 connectors;
- Metal enclosure with fixing lugs;
- Possibility to use Metal hose clamps for fixing it without using lugs;
- Microprocessor for data control;
- Wide temperature range: -40°C / 105°C (-40°F / 221°F).

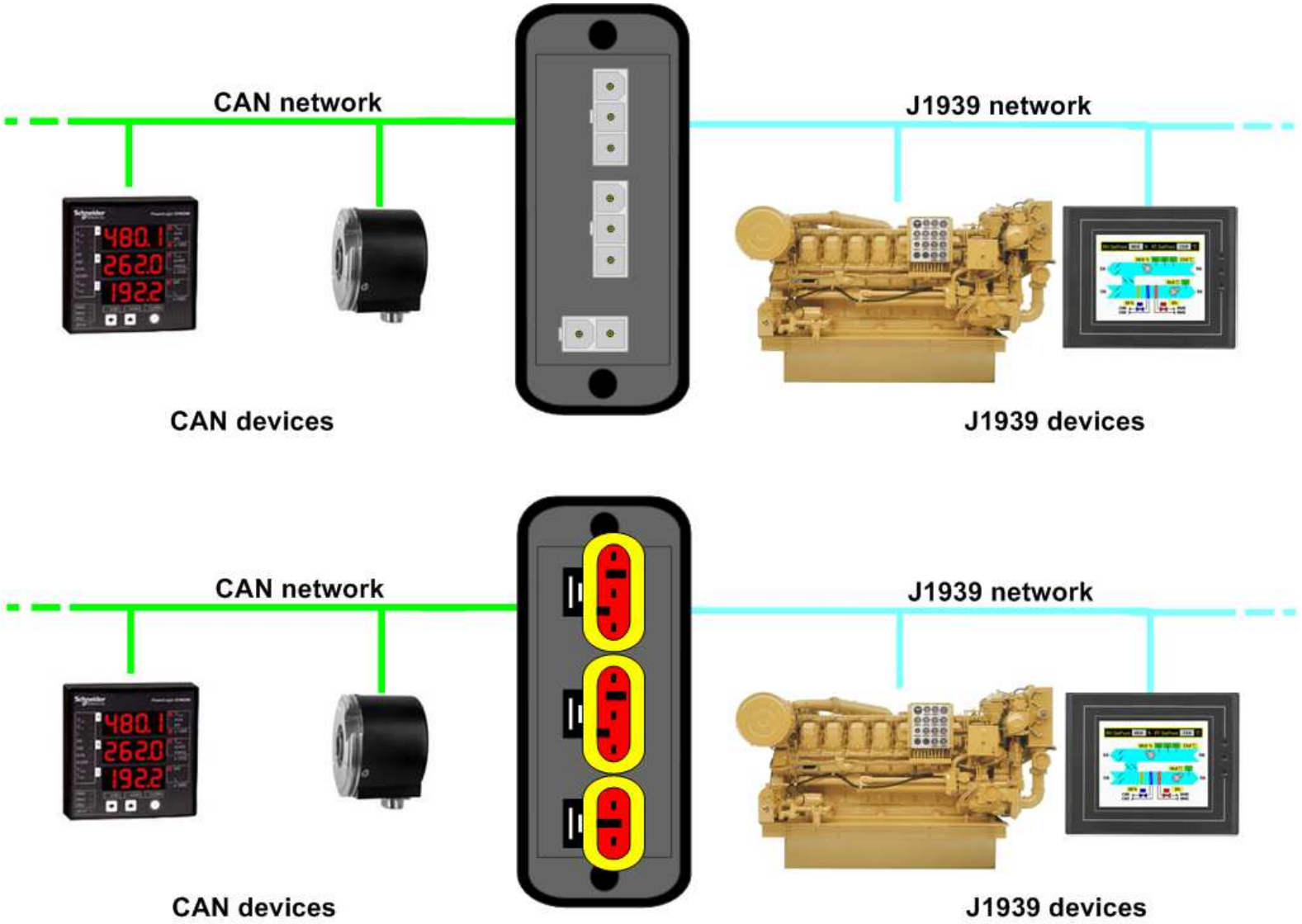
**CONFIGURATION:**

The "J1939 / CAN" Converter allows to a J1939 network to communicate with CAN devices.

You need Compositor SW67439 software on your PC in order to perform the following:

- Define that J1939 frames of the J1939 network are reading from CAN;
- Define that J1939 frames of the J1939 network are writing from CAN;
- Define the Receive CAN Frames;
- Define the Transmit CAN Frames;

**EXAMPLE OF CONNECTION:**



**CONNECTION SCHEME:**

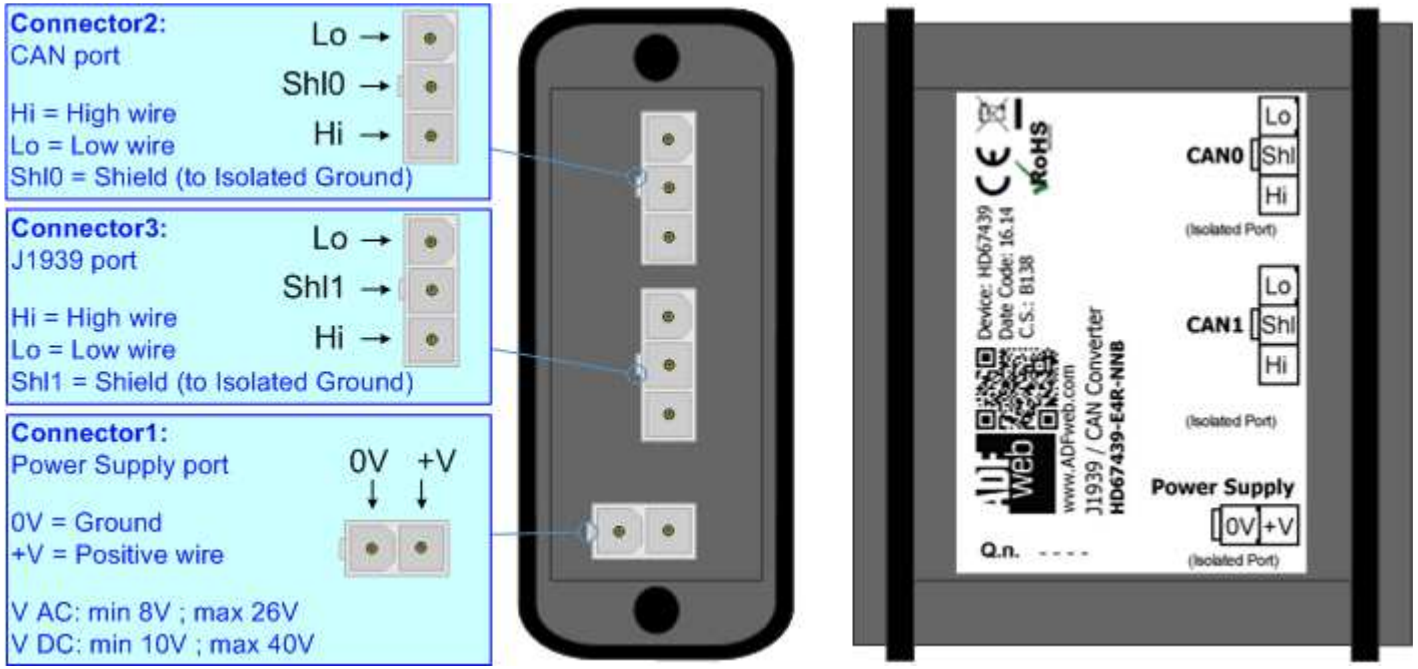



*Figure 1-1: Connection scheme for HD67439-E4x-xxx*

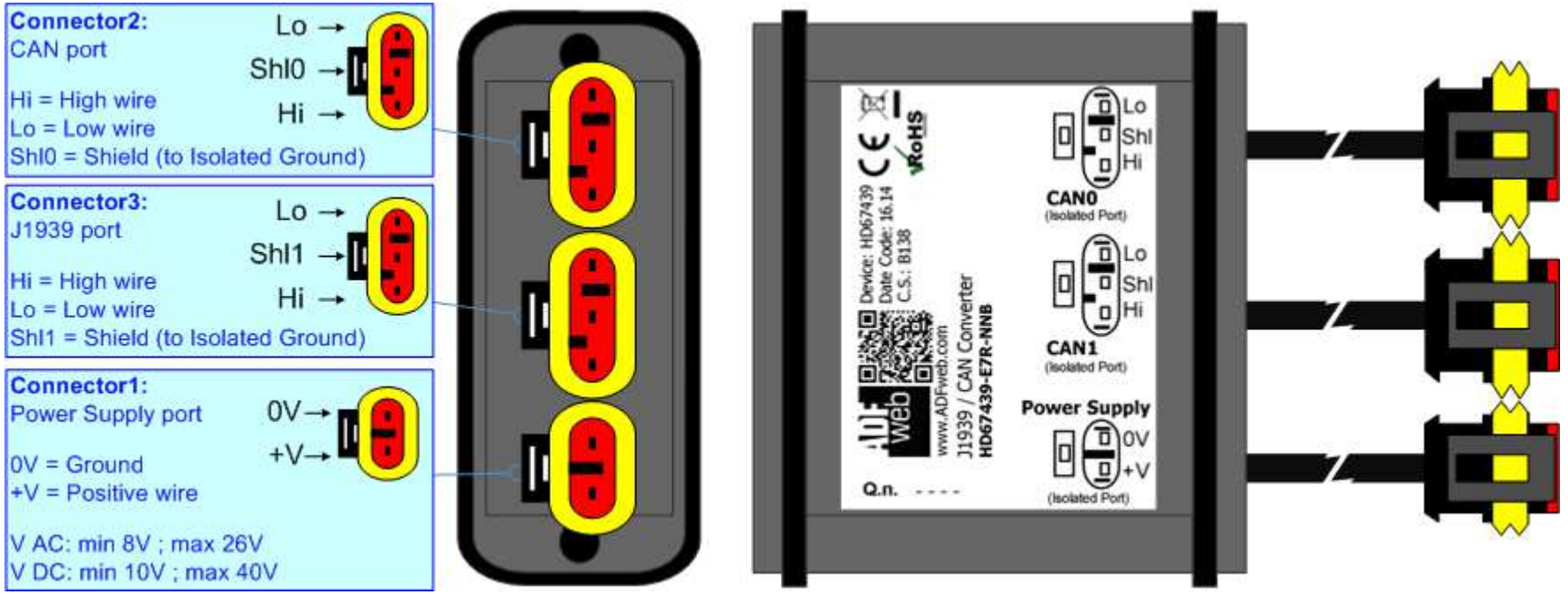
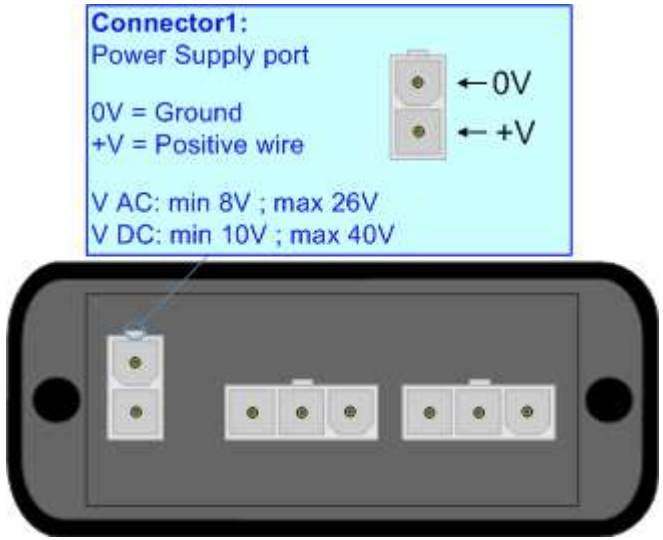



*Figure 1-2: Connection scheme for HD67439-E7x-xxx*

**POWER SUPPLY:**

The devices can be powered between a wide range of tensions. For more details see the two tables below.

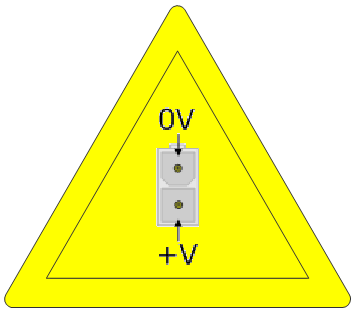
| | VAC ~ | | VDC ⎓ | |
|---|---|---|---|---|
| | **Vmin** | **Vmax** | **Vmin** | **Vmax** |
| **HD67439-Exx-xxx** | **8V** | **26V** | **10V** | **40V** |



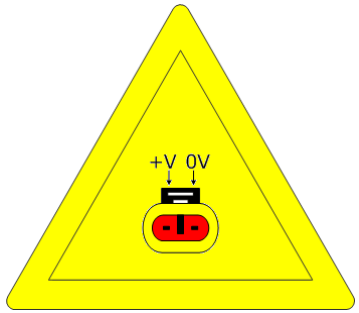

Consumption at 24V DC:

| Device | W/VA |
|---|---|
| HD67439-Exx-xxx | 4 |

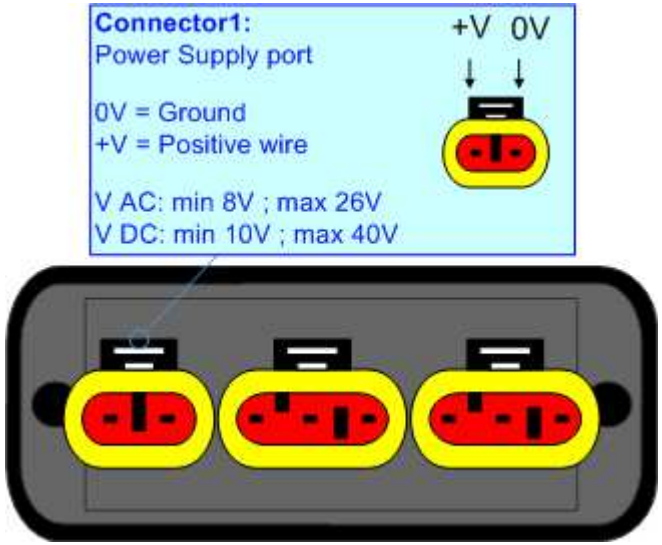
**Caution: Not reverse the polarity power**




HD67439-E4x-xxx




HD67439-E7x-xxx



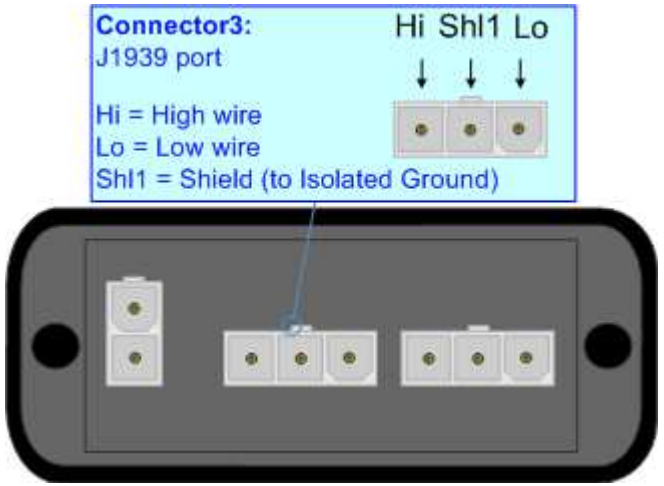

Note: It is possible to use also negative tensions. In this case the polarity must be inverted.

**J1939:**

The connection of J1939 in the HD67439-E4x-xxx device must be made with a 3way MiniFit Female connector. The pinout of Male Mini-Fit connector of the board is at right side of the page.

The connection of J1939 in the HD67439-E7x-xxx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

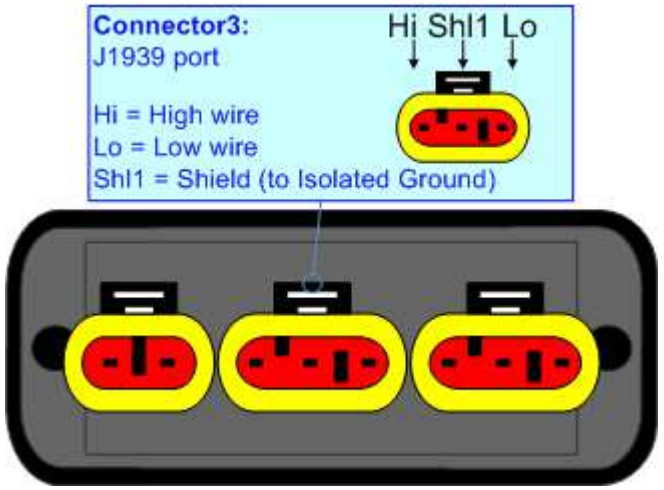
The termination of J1939 line, with a 120Ω resistor, in the HD67439-Exx-xxx is made internally of the device; when the order is performed. If the device have the J1939 terminated the code is the follow: HD67439-Exx-xYx; otherwise is this other: HD67439-Exx-xNx.




Cable characteristics:

| | | | |
|---|---|---|---|
| **DC parameter:** | | Impedance | 70 Ohm/m |
| **AC parameters:** | | Impedance | 120 Ohm/m |
| | | Delay | 5 ns/m |

| **Length** | | **Baud Rate [bps]** | **Length MAX [m]** |
|---|---|---|---|
| | | 10 K | 5000 |
| | | 20 K | 2500 |
| | | 50 K | 1000 |
| | | 100 K | 650 |
| | | 125 K | 500 |
| | | 250 K | 250 |
| | | 500 K | 100 |
| | | 800 K | 50 |
| | | 1000 K | 25 |

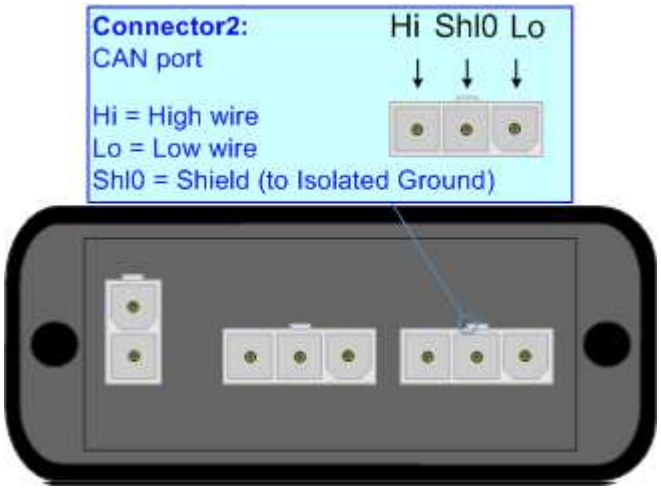


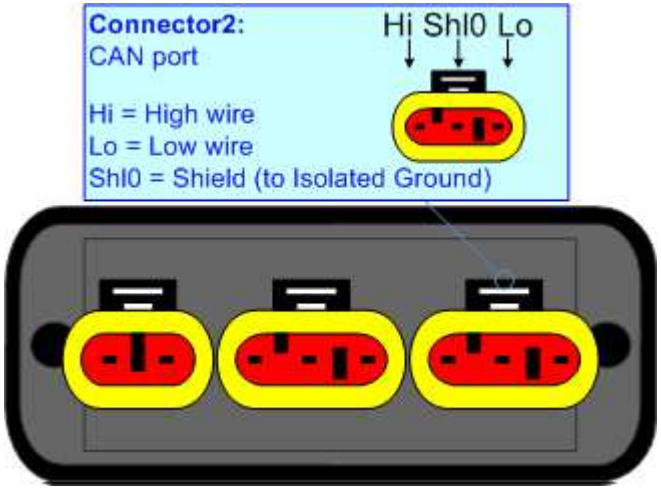
**CAN:**

The connection of CAN in the HD67439-E4x-xxx device must be made with a 3way MiniFit Female connector. The pinout of Male Mini-Fit connector of the board is at right side of the page.

The connection of CAN in the HD67439-E7x-xxx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

The termination of CAN line, with a 120Ω resistor, in the HD67439-Exx-xxx is made internally of the device; when the order is performed. If the device have the CAN terminated the code is the follow: HD67439-Exx-Yxx; otherwise is this other: HD67439-Exx-Nxx.




Cable characteristics:

| | | | |
|---|---|---|---|
| **DC parameter:** | | Impedance | 70 Ohm/m |
| **AC parameters:** | | Impedance | 120 Ohm/m |
| | | Delay | 5 ns/m |

| **Length** | | **Baud Rate [bps]** | **Length MAX [m]** |
|---|---|---|---|
| | | 10 K | 5000 |
| | | 20 K | 2500 |
| | | 50 K | 1000 |
| | | 100 K | 650 |
| | | 125 K | 500 |
| | | 250 K | 250 |
| | | 500 K | 100 |
| | | 800 K | 50 |
| | | 1000 K | 25 |

**USE OF COMPOSITOR SW67439:**

To configure the Converter, use the available software that runs with Windows, called SW67439. It is downloadable on the site www.adfweb.com and its operation is described in this document.

When launching the SW67439 the right window appears (Fig. 2):

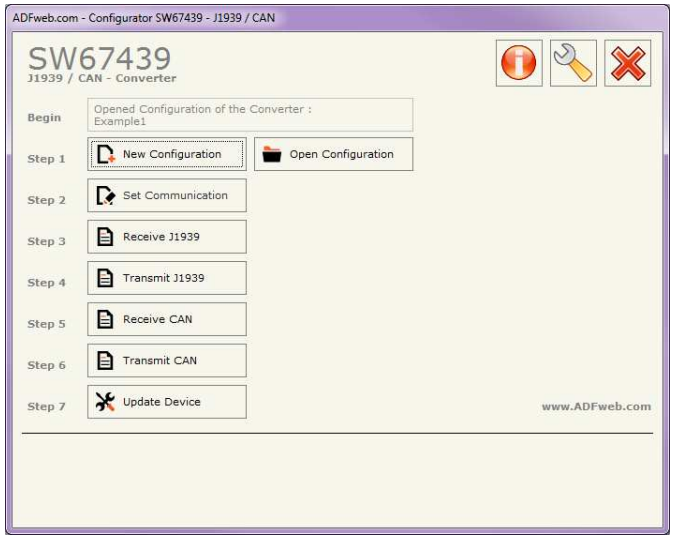
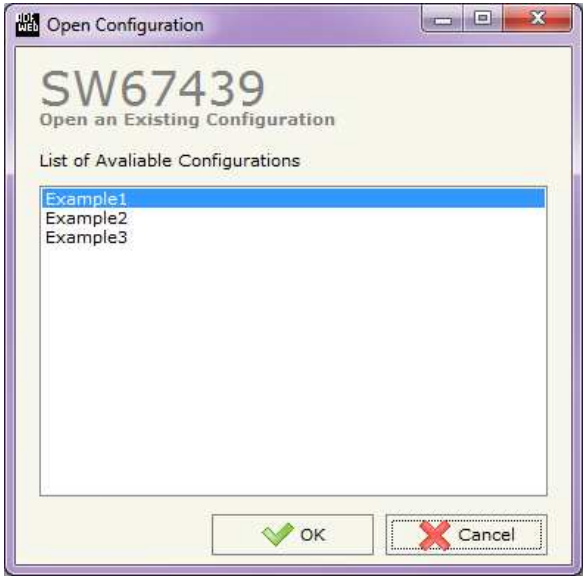



*Figure 2: Main window for SW67439*

**NEW PROJECT / OPEN PROJECT:**




The "**New Project**" button creates the folder which contains the entire device configuration.

A device configuration can also be imported or exported:

- To clone the configurations of a Programmable "J1939 / CAN - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "**Open Project**".

**SOFTWARE OPTIONS:**

In this section there is the possibility to change the language of the software and check the updatings for the compositor.

In the section "Language" it is possible to change the language of the software.

In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "Check Software Update at Start of program", the SW67438 check automatically if there are updatings when it is launched.

*Figure 3: Language Options*

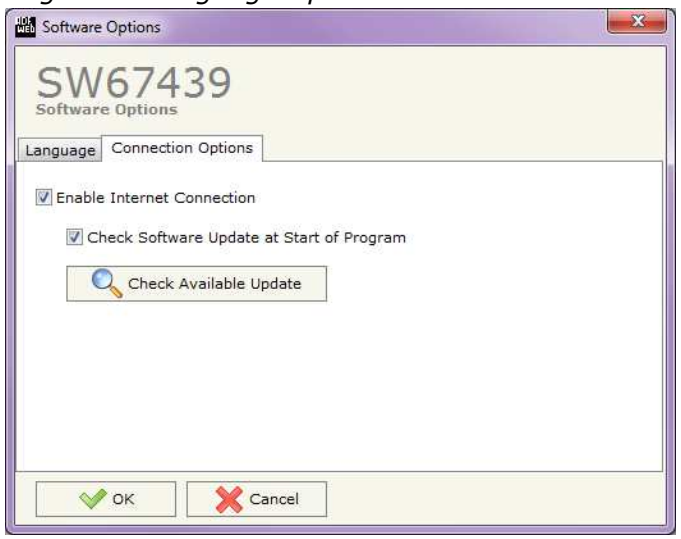



*Figure 4: Updating options*

**SET COMMUNICATION:**

This section defines the fundamental communication parameters of two buses, J1939 and CAN**.**

By pressing the "**Set communication**" button from the main window for SW67439 (Fig. 2) the window "Set Communication" appears (Fig. 5). It is divided in two sub-section, one for the J1939 and the other for the CAN:

- In the fields "**Baudrate**", the velocity of J1939 and CAN are defined;
- In the field "**TimeOut Data (s)**" insert a time, when this time is elapsed the data isn't reliable and in the CAN objects you can read "FFFF";
- If the field "**Enable Peer to Peer**" is cheked the gateway accept any ID that have the PGN inserted in the section "Receive J1939";
- In the field "**Device ID J1939**" the J1939 address is defined.

*Figure 5: "Set Communication" window*

**RECEIVE J1939:**

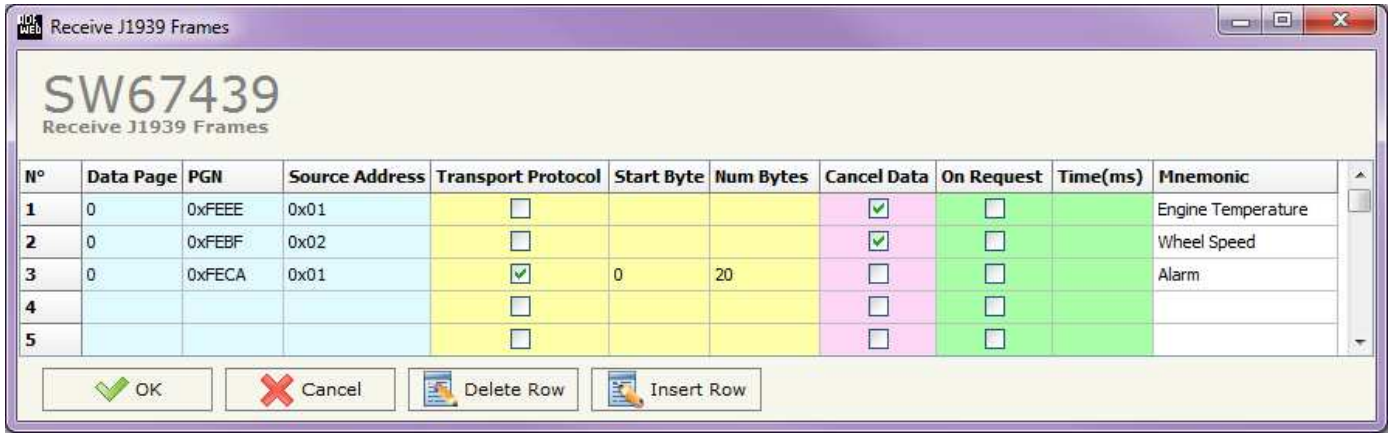

Receive J1939 Frames
SW67439
Receive J1939 Frames
N° Data Page PGN Source Address Transport Protocol Start Byte Num Bytes Cancel Data On Request Time(ms) Mnemonic
1 0 0xFEEE 0x01 Engine Temperature
2 0 0xFEBF 0x02 Wheel Speed
3 0 0xFECA 0x01 0 20 Alarm
4
5
OK
Cancel
Delete Row
Insert Row

*Figure 6: "Receive J1939" window*

By pressing the "**Receive J1939**" button from the main window for SW67439 (Fig. 2) the window "Receive J1939" appears (Fig. 6).

The means of the fields of the table are:

- In the field "**Data Page**" insert the data page, the value is 0 or 1 (usually is 0)
- In the field "**PGN**" insert the PGN of the data you would to read from modbus to J1939. (in the J1939 protocol the PGN is an identifier);
- In the field "**Source Address**" insert the address of the device that send the frame.
- If the field "**Transport Protocol**" is checked the frame can use transport protocol functions;
- In the field "**Start Byte**" insert the byte which you would start read, this field is enable only when the field Multi Frame is checked;
- In the field "**Num Bytes**" insert the number of byte you would read, for example your Start Byte is 20 and Num Bytes is 10, you can read the byte from 20 to 30.
- If the field "**Cancel Data**" is checked the Time Out on the data is Enable. When the data arrived from J1939 are oldest of the TimeOut (defined in the section "Set Communication") the data bytes take the 0xFF value.
- If the field "**On Request**" is checked the Remote Request frame is enable. The converter send the Remote Request frame cyclically with an interval expressed in the "Time(ms)" fields.
- In the field "**Time(ms)**" the interval of the Remote Request is defined.
- In the field "**Mnemonic**" the description for the frame is defined.

**TRANSMIT J1939:**

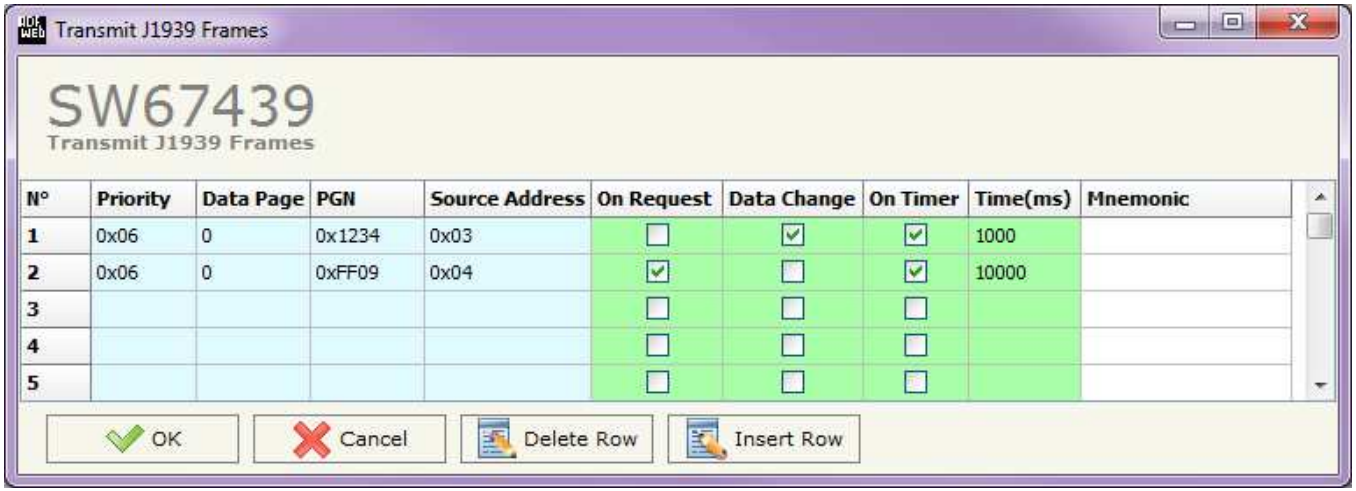



*Figure 7: "Transmit J1939" window*

By pressing the "**Transmit J1939**" button from the main window of SW67439 (Fig. 2) the window "Transmit J1939" appears (Fig. 7):

- In the field "**Priority**" insert the priority of the frame, in J1939 protocol is a number among 0,1,2,3,4,5,6,7. The number 0 is the highest priority and 7 is the lowest;
- In the field "**Data Page**" insert the data page, in the J1939 protocol is 0 or 1;
- In the field "**PGN**" insert the PGN of the J1939 frame to send with the date of the CAN (in the J1939 protocol the PGN is an identifier);
- In the field "**Source Address**" insert the Souce Address that will be send with the J1939 frame.
- If the field "**Request**" is checked, the J1939 frame is sended when arrive a request frame from the J1939 network;
- If the field "**Data Change**" is checked, the J1939 frame is sended when a byte of the data change value;
- If the field "**On Timer**" is checked, the J1939 frame is sended cyclically;
- In the field "**Send Timer**" it is possible to insert the time (in milliseconds) to wait between two send.
- In the field "**Mnemonic**" the description for the frame is defined.

**RECEIVE CAN:**

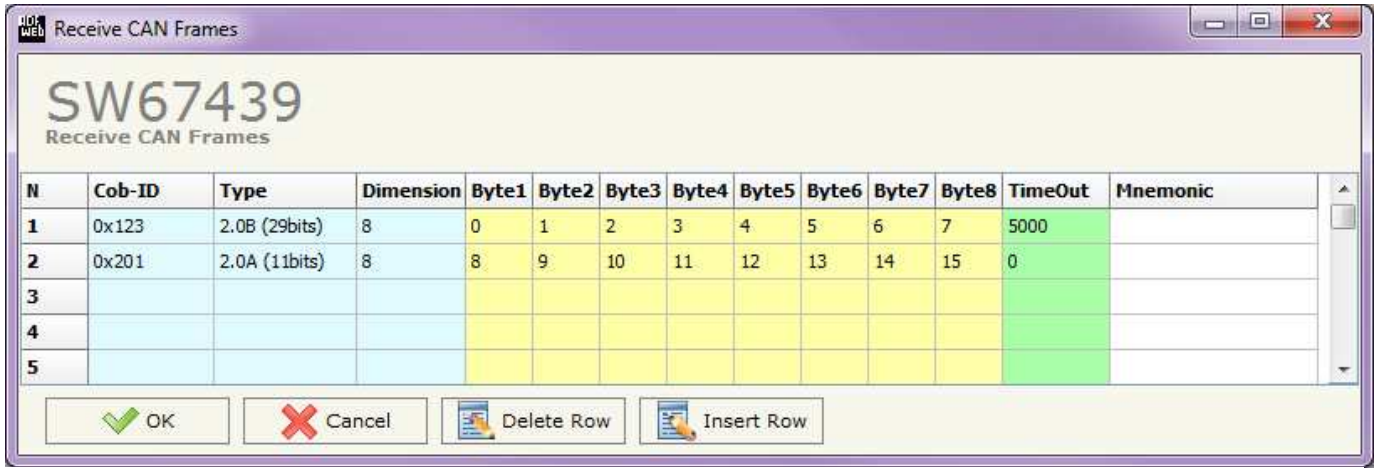



*Figure 8: "Receive CAN Frames" window*

By pressing the "**Receive CAN**" button from the main window for SW67439 (Fig. 2) the window "Receive CAN Frames" appears (Fig. 8).

The means of the fields of the table are:

- In the field "**Cob-ID**" insert the COB of the CAN frame;
- In the field "**Type**" is possible to select which type of CAN packet use for the Cob-ID, or 2.0A(11bits) or 2.0B(29bits);
- In the field "**Dimension**" insert the number of bytes of the CAN frame (from 1 to 8);
- In the field "**Byte1**" insert the offset of the internal array where to write the byte 1 of the CAN frame;
- In the field "**Byte2**" insert the offset of the internal array where to write the byte 2 of the CAN frame;
- In the field "**Byte3**" insert the offset of the internal array where to write the byte 3 of the CAN frame;
- In the field "**Byte4**" insert the offset of the internal array where to write the byte 4 of the CAN frame;
- In the field "**Byte5**" insert the offset of the internal array where to write the byte 5 of the CAN frame;
- In the field "**Byte6**" insert the offset of the internal array where to write the byte 6 of the CAN frame;
- In the field "**Byte7**" insert the offset of the internal array where to write the byte 7 of the CAN frame;
- In the field "**Byte8**" insert the offset of the internal array where to write the byte 8 of the CAN frame;
- In the field "**TimeOut**" insert the time (in ms) of the timeout of the data, if don't arrive a new CAM frame within this time all the data of the CAN frame will be set to zero. If set the time equal to zero this function is disable;
- In the field "**Minemonic**" it is possible to insert a brief description.

**TRANSMIT CAN:**

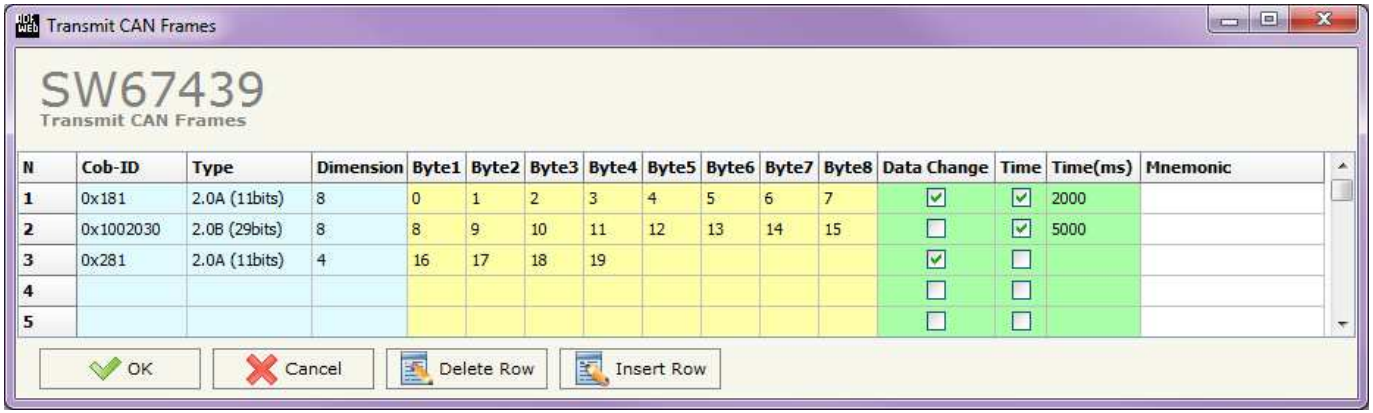



*Figure 9: "Transmit CAN Frames" window*

By pressing the "**Receive CAN**" button from the main window for SW67439 (Fig. 2) the window "Receive CAN Frames" appears (Fig. 8).

The means of the fields of the table are:

- In the field "**Cob-ID**" insert the COB of the CAN frame;
- In the field "**Type**" is possible to select which type of CAN packet use for the Cob-ID, or 2.0A(11bits) or 2.0B(29bits);
- In the field "**Dimension**" insert the number of bytes of the CAN frame (from 1 to 8);
- In the field "**Byte1**" insert the offset of the internal array where to read the byte 1 of the CAN frame to send;
- In the field "**Byte2**" insert the offset of the internal array where to read the byte 2 of the CAN frame to send;
- In the field "**Byte3**" insert the offset of the internal array where to read the byte 3 of the CAN frame to send;
- In the field "**Byte4**" insert the offset of the internal array where to read the byte 4 of the CAN frame to send;
- In the field "**Byte5**" insert the offset of the internal array where to read the byte 5 of the CAN frame to send;
- In the field "**Byte6**" insert the offset of the internal array where to read the byte 6 of the CAN frame to send;
- In the field "**Byte7**" insert the offset of the internal array where to read the byte 7 of the CAN frame to send;
- In the field "**Byte8**" insert the offset of the internal array where to read the byte 8 of the CAN frame to send;
- If the field "**Data Change**" is checked, the CAN frame is sent when a data byte change value;
- If the field "**Time**" is checked, the CAN frame is sent cyclically;
- In the field "**Time(ms)**" insert the interval (in ms) between the sent (if the option "**Time**" is checked);
- In the field "**Minemonic**" it is possible to insert a brief description.

**UPDATE DEVICE:**

By pressing the "**Update Device**" button from the main window for SW67439 (Fig. 2) the right window appears (Fig. 10).

Note:
For updating the device you need the programmer "AC67400 - CAN Interface to configure devices".

In order to load the parameters or update the firmware in the gateway, follow these instructions:

- Connect the "AC67400" programmer to the PC through the USB port and connect the CAN port of the "AC67400" to the J1939 port of HD67439-Exx-xxx;
- Select the "**COM port**" where the "AC67400" is connected (the USB port of the device is see like a COM port);
- If the Baudrate of J1939 is known select it in the field "Select the BaudRate of CAN" otherwise you have to select "**Search Baudrate**";
- Press the "**Next**" button;
- Select which operations you want to do. You can select only "**Firmware**", only "**Project**" or both of them;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" the configuration/firmware on the device is correctly updated and it is possible to disconnect the "AC67400" programmer.

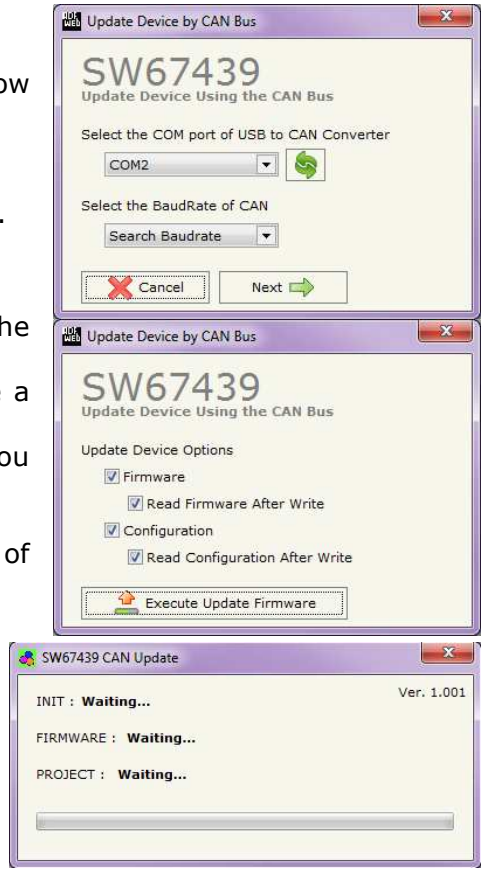



*Figure 10: "Update Device"*

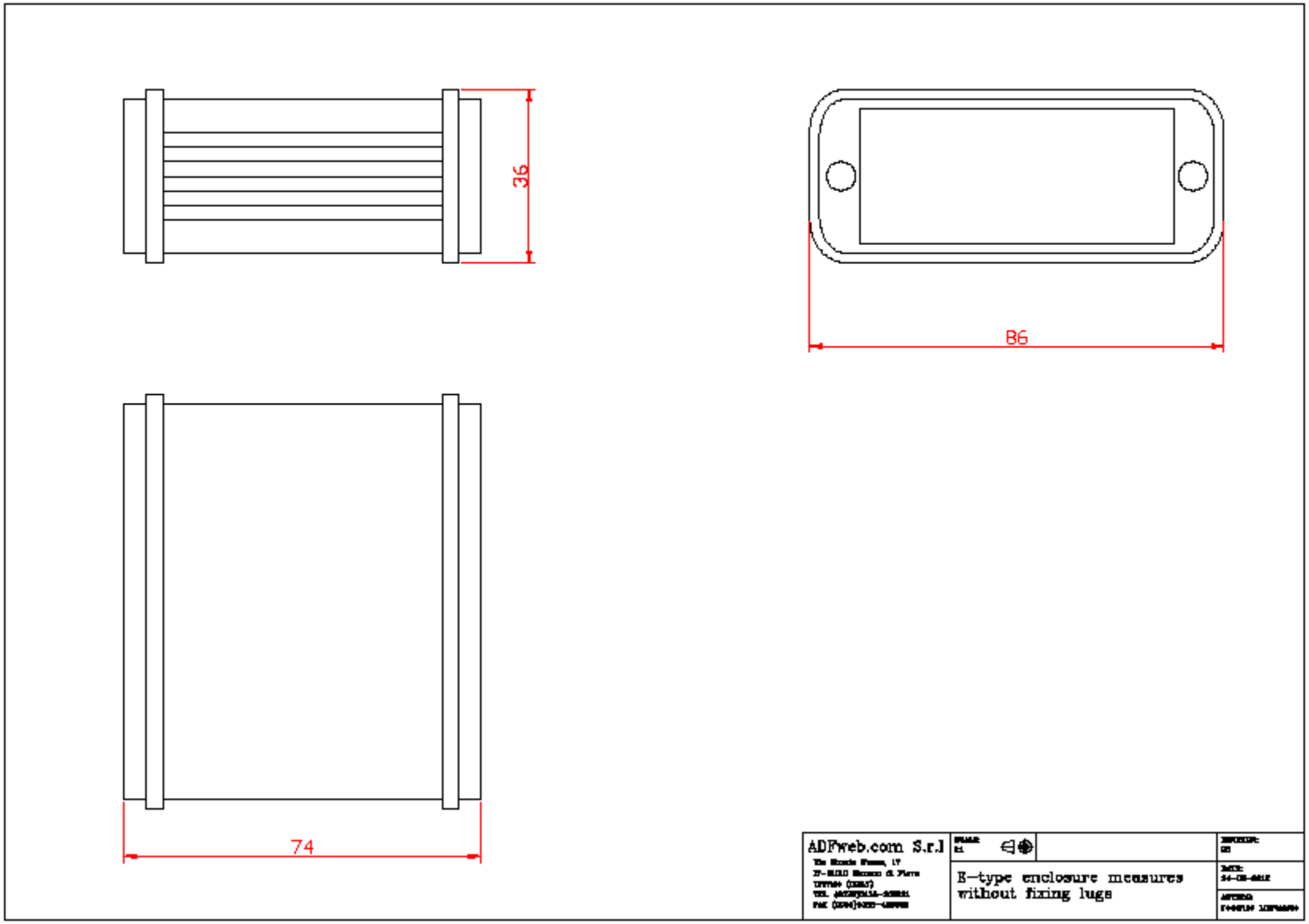
Note:
When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67439-Exx-xxx device.

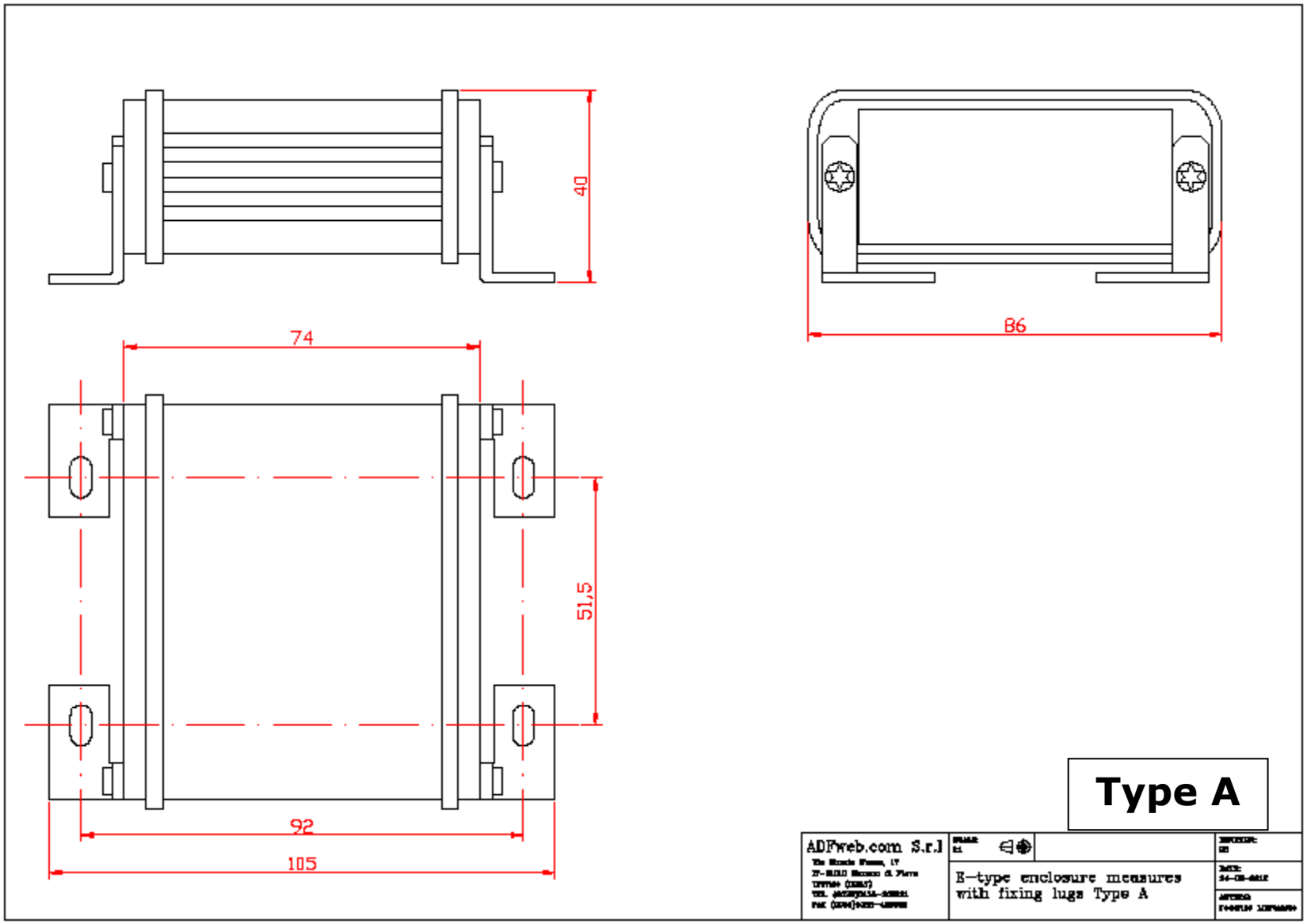
Warning:
If the Fig. 11 appears when you try to do the Update before require assistance try these points:

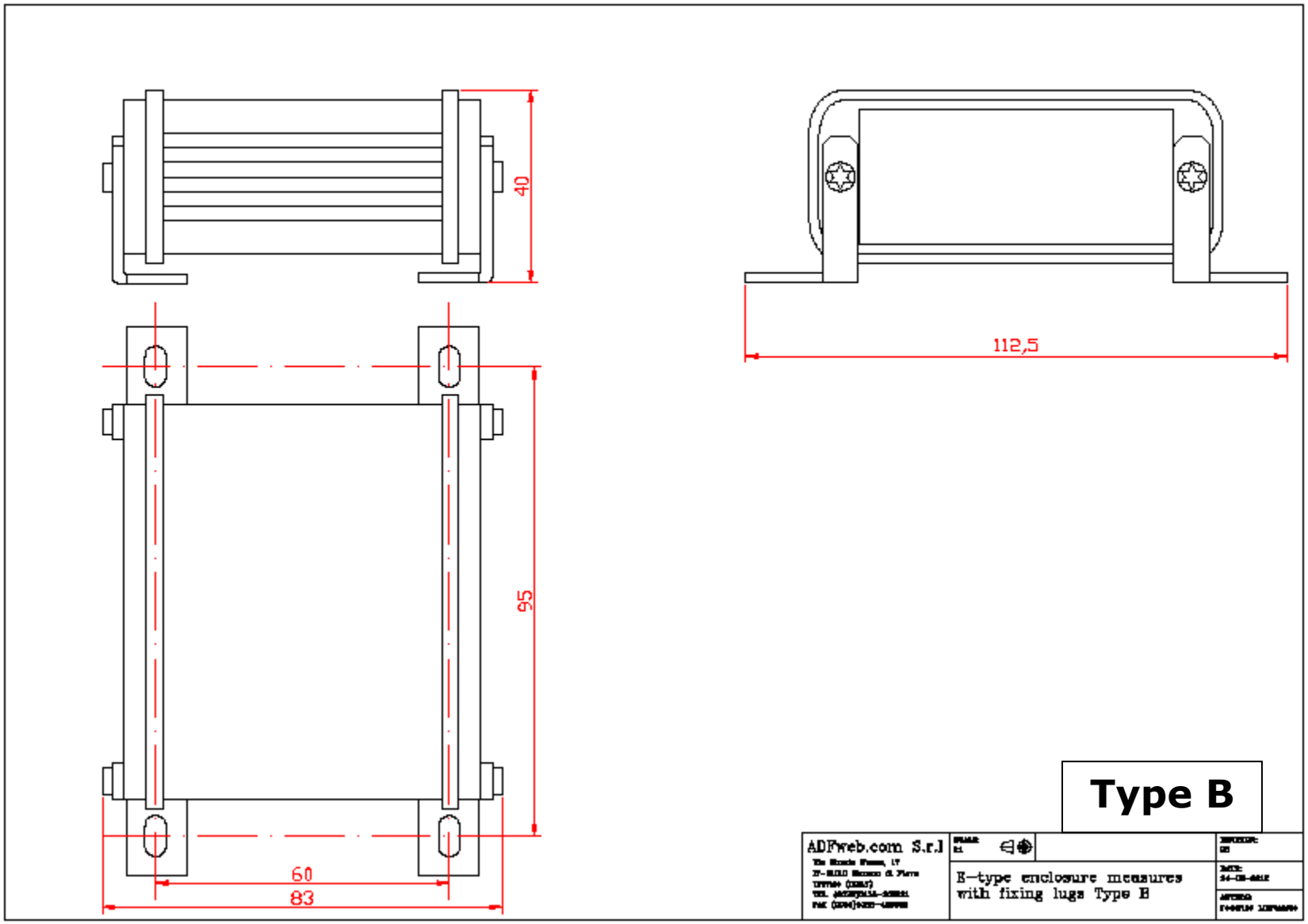
- Check if the serial COM port selected is the correct one;
- Check if the J1939 cable is connected between the "AC67400" and the device;
- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC.

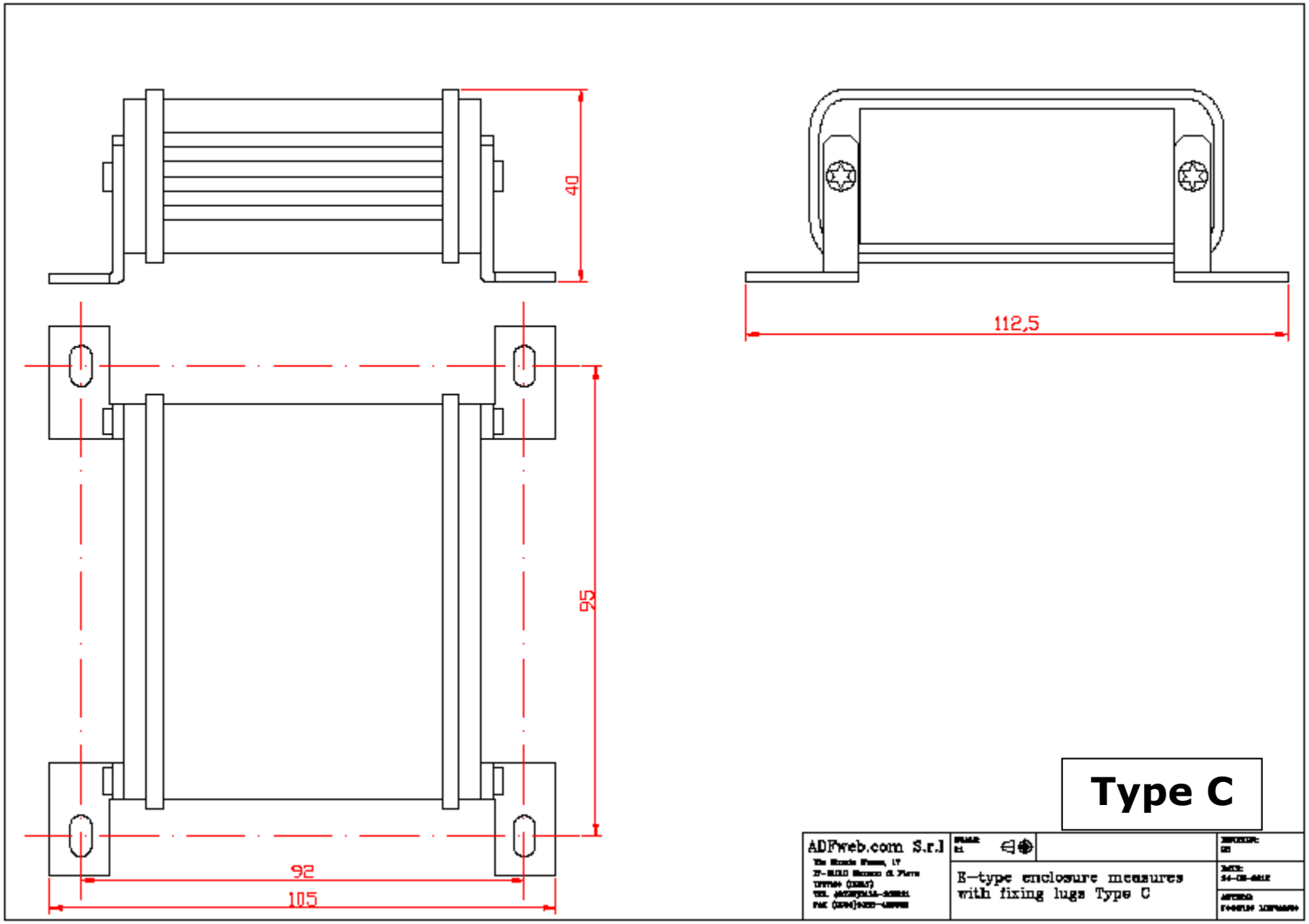
*Figure 11: "Protection" window*

**MECHANICAL DIMENSIONS:**




40
86
74
51,5
92
105
Type A
ADFweb.com S.r.l
E-type enclosure measures
with fixing lugs Type A


40
112,5
95
60
83
Type B
ADFweb.com S.r.l
E-type enclosure measures
with fixing lugs Type B


40
112,5
95
92
105
Type C
ADFweb.com S.r.l
E-type enclosure measures
with fixing lugs Type C

**ORDERING INFORMATIONS:**

The ordering part number is formed by a valid combination of the following:

**HD67439 – E y z – s d f**

**Fixing lugs**
A: Type 1
B: Type 2
C: Type 3

**J1939 Termination**
Y: Terminated with 120Ω
N: Not terminated

**CAN Termination**
Y: Terminated with 120Ω
N: Not terminated

**Varnished/Resinated**
V: Varnished
R: Resined

**Connectors Type**
4: MiniFit
7: SuperSeal 1.5

**Enclosure Type**
E: Metal enclosure

**Device Family**
HD67439 = J1939 / CAN - Converter

**ACCESSORIES:**

Order Code: **AC34001** - Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC

Order Code: **AC34002** - Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC

## DISCLAIMER

All technical content within this document can be modified without notice. The content of the document content is a recurring audit.
For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

## OTHER REGULATIONS AND STANDARDS

### WEEE INFORMATION

Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).
This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

### RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

### CE MARKING

The product conforms with the essential requirements of the applicable EC directives.

## WARRANTIES AND TECHNICAL SUPPORT:

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com.
Otherwise contact us at the address support@adfweb.com

## RETURN POLICY:

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

1) Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
2) Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks.
If the product is no longer under warranty, you will receive a repair estimate.

## PRODUCTS AND RELATED DOCUMENTS:

| Part | Description | URL |
|---|---|---|
| HD67121 | Gateway CANopen / Canopen | www.adfweb.com?product=HD67121 |
| HD67002 | Gateway CANopen / Modbus - RTU | www.adfweb.com?product=HD67002 |
| HD67004<br>HD67005 | Gateway CANopen / Modbus – Ethernet TCP | www.adfweb.com?product=HD67004 |
| HD67134 | Gateway CANopen / DeviceNet | www.adfweb.com?product=HD67134 |
| HD67117 | CAN bus Repeater | www.adfweb.com?product=HD67117 |
| HD67216 | CAN bus Analyzer | www.adfweb.com?product=HD67216 |